

REMARKS

Claims 1-31 remain present in this application.

Claims 1 and 14 have been amended. Reconsideration of the application, as amended, is respectfully requested.

Amendments to the Claims

Support for the amendments to claims 1 and 14 can be found in originally filed Fig. 3 and the related description on pages 7-10 of the specification. It is therefore respectfully submitted that no new matter is present in the foregoing amendments.

Rejection under 35 USC 102

Claim 1 stands rejected under 35 USC 102(b) as being anticipated by Beretta et al., U.S. Patent 4,897,369. This rejection is respectfully traversed.

Independent claim 1 recites (emphasis added):

1. An apparatus for removing metal from a wafer edge, comprising:
a bath tank containing a chemical bath *for metal etching;*
a rotatable wafer chuck holding a wafer vertical to the chemical bath from a center portion thereof, wherein at least an edge portion of the wafer is covered with a metal layer; and
a sliding element disposed on one end of the rotatable wafer chuck such that the rotatable wafer chuck is removable in a vertical direction to the chemical bath and *only the edge portion of the wafer is immersed in the chemical bath.*

It is respectfully submitted that Beretta et al. fails to teach or suggest at least the features emphasized above in independent claim 1. As disclosed in column 2, lines 31-32 of Beretta et

al., M is a tank containing on the bottom continuously replaced deionized water but not an etching chemical. In addition, as disclosed in Figs. 4-5 and column 2, lines 25, G and H are pairs of rollers but not wafer chucks. Accordingly, it is respectfully submitted that the prior art utilized by the Examiner fails to teach or suggest the apparatus of independent claim 1. Reconsideration and withdrawal of the 35 USC 102(b) rejection are respectfully requested.

Rejections under 35 USC 103

Independent Claim 1

Claims 2-13 stand rejected under 35 USC 103 as be anticipated by Beretta et al. in view of Berdan et al., U.S. Patent 3,898,095. This rejection is respectfully traversed.

Independent claim 1 recites (emphasis added):

1. An apparatus for removing metal from a wafer edge, comprising:
 - a bath tank containing a chemical bath *for metal etching;*
 - a rotatable wafer chuck holding a wafer vertical to the chemical bath from a center portion thereof*, wherein at least an edge portion of the wafer is covered with a metal layer; and
 - a sliding element disposed on one end of the rotatable wafer chuck such that the rotatable wafer chuck is removable in a vertical direction to the chemical bath and *only the edge portion of the wafer is immersed in the chemical bath.*

It is respectfully submitted that the prior art utilized by the Examiner, either alone or in combination, fail to teach or suggest the apparatus of independent claim 1 of the present application. Specifically, it is respectfully submitted that neither Beretta et al. nor Berdan et al. teach or suggest selectively removing metal layers formed at the edge portion of a wafer to thereby reduce a possible particle source to the sequential processing thereof (see page 10 of the

specification). Since claims 2-13 depend from independent claim 1 either directly or indirectly, it is respectfully submitted that these claims are also neither taught nor suggested by the prior art utilized by the Examiner. Reconsideration and withdrawal of this 35 USC 103 rejection are respectfully requested.

Independent Claim 14

Claims 14, 15, 24, 26, and 29-31 stand rejected under 35 USC 103 as unpatentable over Beretta et al. in view of in view of Brown et al., U.S. Publication 2003/0209255. This rejection is respectfully traversed.

Claim 23 stands rejected under 35 USC 103 as being unpatentable over Beretta et al. in view of Ching et al., U.S. Patent 6,797,075. This rejection is respectfully traversed.

Claims 14, 15, 24 and 26-31 stand rejected under 35 USC 103 as being unpatentable over Beretta et al in view of Brown et al., US Publication 2003/0209255.

Claims 16-22 stand rejected under 35 USC 103 as being unpatentable over Beretta et al. in view of Brown et al. and further in view of Berdan et al. This rejection is respectfully traversed.

Claim 25 stands rejected under 35 USC 103 as being unpatentable over Beretta et al. in view of Brown et al., and further in view of Dunn, U.S. Patent 6,539,963. This rejection is respectfully traversed.

Claim 23 stands rejected under 35 USC 103 as being unpatentable over Beretta et al. in view of Brown et al. and further in view of Erk et al., U.S. Patent 5,593,505. This rejection is respectfully traversed.

Independent claim 14 recites (emphasis added):

14. A method for removing metal from a wafer edge, comprising the steps of:

providing a wafer with a metal layer at least covering an edge portion thereof held by a rotatable wafer chuck from a center portion thereof;

vertically immersing only the edge portion of the wafer into a chemical bath for etching the metal layer; and

rotating the rotatable wafer chuck to remove the metal layer at only the edge portion from the surface and the edge of the wafer.

Under MPEP 2143, to establish a prima facie case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

Independent claim 14 recites a combination of steps including “*providing a wafer with a metal layer at least covering an edge portion thereof held by a rotatable wafer chuck from a center portion thereof*”, “*vertically immersing only the edge portion of the wafer into a chemical bath for etching the metal layer*” and “*rotating the rotatable wafer chuck to remove the metal layer at only the edge portion from the surface and the edge of the wafer*”. It is respectfully submitted that the prior art utilized by the Examiner, either alone or in combination, fails to teach or suggest this combination of features.

As previously discussed, as can be seen in column 2, lines 31-32 of Beretta et al., M is a tank containing on the bottom continuously replaced deionized water but not an etching chemical. In addition, as disclosed in Figs. 4-5 and column 2, lines 25 of Beretta et al., G and H are pairs of rollers but not wafer chucks. In addition, Ching et al. also teaches an apparatus for processing wafers by entirely immersing the same into a stripping chemical (see Figs. 1, 3B, 4B, 5B, and 6B). Moreover, Brown et al. teaches a method for cleaning a backside of a wafer by a scrubber device, but requires no chemical bath therein (see Fig. 1). It is therefore respectfully

submitted that neither Beretta et al, Ching et al, or Brown et al., either alone or in combination, teaches or suggests the method of independent claim 14 for selectively removing metal layers formed at the edge portion of a wafer to thereby reducing a possible particle source to the sequential processing thereof.

It is therefore respectfully submitted that the prior art utilized by the Examiner fails to teach or suggest the method of independent claim 14 and its dependent claims. Reconsideration and withdrawal of the 35 USC 103 rejections are respectfully requested.

Conclusion

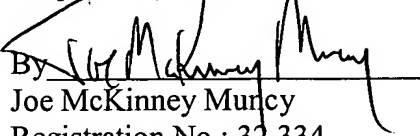
Favorable reconsideration and an early Notice of Allowance are earnestly solicited.

In the event that any outstanding matters remain in this application, the Examiner is invited to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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